

**REMARKS**

Claims 1-31 are pending in this application, claims 7-24 and 27-31 having been withdrawn from consideration. By this Amendment, claims 1 and 4 are amended. Support for the amendments to claims 1 and 4 can be found in the specification as originally filed, for example, at page 4, lines 27-31; page 5, lines 24-37; and page 6, lines 23-25; and in original claims 1-4 and 6. No new matter is added by these amendments.

**I. Rejections Under 35 U.S.C. §112**

The Office Action rejects claim 1 under 35 U.S.C. §112, first paragraph, as not being enabled by the original disclosure. The Office Action also rejects claims 2 and 4 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. In particular, the Office Action asserts that claims 2 and 4 do not properly further limit the claims from which they depend.

While Applicants do not necessarily agree with these rejections, claims 1 and 4 are amended herein to clarify the claims and to overcome the rejections. For at least these reasons, Applicants respectfully request that the rejections under 35 U.S.C. §112 be reconsidered and withdrawn.

**II. Claimed Subject Matter**

Independent claim 1 sets forth, in pertinent part, a "halogen-free fire-retarded plastic composition suitable for coating a substrate, comprising an acrylic resin and an intumescent agent, wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed; - said composition exhibits, at low shear rates, Newtonian rheological behavior with a viscosity of less than 6000 mPa.s; - said composition exhibits, at high shear rates, pseudoplastic

rheological behavior; - the intumescent agent comprises at least one strong acid compound; - the intumescent agent is included in the composition in a proportion by weight of 50 to 200%; and - the plasticizing medium comprises a plasticizer chosen from the group consisting of phthalates, phosphates and phosphate/phthalate-type plasticizers." Claims 2-6, 25 and 26 depend, directly or indirectly, from claim 1 and include all of the limitations thereof.

### **III. Rejections Under 35 U.S.C. §102/§103**

#### **A. Bridge**

The Office Action rejects claim 1 under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) over Great Britain Patent Publication No. 2,079,801 to Bridge. Applicants respectfully traverse this rejection.

Bridge discloses enhancing weld-splash resistance in glass fabrics by treating the glass fabrics with a non-intumescent, char-forming composition. *See* Bridge, Abstract. The Bridge compositions include a dehydrateable polyol, such as a sugar, and a dehydrating agent, such as a free strong acid. *See* Bridge, page 1, lines 41-49. Bridge also teaches that its treatment compositions may include a plasticizer with the polyol. *See* Bridge, page 1, lines 52-53. Based on these teachings, the Office Action asserts that Bridge anticipates or renders obvious independent claim 1. Applicants respectfully disagree.

However, Bridge does not disclose, nor does it suggest, a "halogen-free fire-retarded plastic composition ... comprising an acrylic resin and an intumescent agent, wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1. That is, independent claim 1 requires that the composition is in a plastisol state. A plastisol in a gelled state is a "dispersion of polymer, fillers and various additives in a plasticizer." *See* Specification, page 5, lines 21-23. More generally, a plastisol is "a liquid dispersion consisting of very small particles of resin in a plasticizer," or a "dispersion of finely divided resin in a

plasticizer. A typical composition is 100 parts resin and 50 parts plasticizer, forming a paste that gels when heated ... as a result of salvation of the resin particles by the plasticizer." *See* Attachment A: dictionary page 1034, labeled "annex 11"; Attachment B: HAWLEY'S CONDENSED CHEMICAL DICTIONARY 889 (13th ed. 1997). In addition, plastisols do not generally contain water, as plasticizers are not usually formulated as including water in significant amounts. *See* Attachment C: Technical DataSheet Abstracts for 10 exemplary plasticizer compositions (all have water contents of 0.2% or less). The claimed compositions are in a plastisol state, and do not contain significant amounts of water, as can be seen from the examples in the specification. *See* Specification, page 8, line 12 - page 10, line 27.

Contrary to the assertion that the Bridge compositions are in a plastisol state because the Bridge compositions contain plasticizers, Bridge does not teach or even suggest a plastisol composition. Bridge teaches that its compositions are emulsions of starches or sugars, phosphate plasticizers, polymer and polyol in large excess of water. *See* Bridge, page 2, line 40 - page 5, line 39. But water is not a plasticizer, and Bridge does not teach or suggest that its polymers and polyols are dispersed in its plasticizers, as would be required for a plastisol state. *See generally* Bridge. Rather, Bridge teaches compositions that contain large amounts of water and that are not in a plastisol state.

Because Bridge does not teach or suggest a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1, claim 1 is patentable over Bridge. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**B. Langer**

The Office Action rejects claims 1, 2 and 6 under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) over U.S. Patent No. 5,523,059 to Langer. Applicants respectfully traverse this rejection.

Langer discloses intumescent sheet materials that include unexpanded intumescent material, ceramic fibers, glass fibers, and organic binder, which may itself include a plasticizer. *See* Langer, Abstract; col. 3, lines 62-65. Based on these teachings, the Office Action takes the position that claim 1 and its dependent claims 2 and 6 are anticipated by or would have been obvious over Langer. Applicants respectfully disagree.

Langer teaches that its organic binder materials may be aqueous polymer emersions, solvent-based polymers and 100% solids polymers, and that at least one plasticizer may be included. *See* Langer, col. 3, lines 35-37; col. 3, lines 62-65. Practically, Langer teaches forming its mat compositions by combining water, glass fibers, ceramic fibers, aqueous emulsions of polymers and fillers. *See* Langer, col. 2, lines 47-53; col. 6, lines 20-58. However, Langer does not teach or suggest that its polymers are dispersed in its plasticizers, as necessary for a plastisol state, as discussed above. *See generally* Langer. Rather, Langer teaches compositions that contain large amounts of water, which is not a plasticizer, and, therefore, the Langer compositions are emulsions or suspensions of resin and other materials in water. Thus, the Langer compositions are not in a plastisol state, as required by independent claim 1, contrary to the assertion that the Langer compositions are in a plastisol state because the Langer compositions may contain plasticizers.

Because Langer does not teach or suggest a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1, independent claim 1 and its dependent claims 2 and 6 are patentable over

Langer. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**C. Merry**

The Office Action rejects claims 1-3 and 6 under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) over U.S. Patent No. 5,638,039 to Merry. Applicants respectfully traverse this rejection.

Merry discloses a method of making a catalytic converter that includes forming a coating from a flowable mounting material that includes unexpanded intumescent material, binder, fibers, fillers and liquid. *See Merry*, Abstract; col. 2, lines 45-49; col. 3, lines 54-59. Based on these teachings, the Office Action takes the position that claim 1 and its dependent claims 2, 3 and 6 are anticipated by or would have been obvious over Merry. Applicants respectfully disagree.

Merry describes a flowable mounting material as a viscous paste including a binder and intumescent agent dispersed in water or solvent. *See Merry*, col. 5, line 10; col. 5, lines 29-33. The Merry binders may be organic binders, such as aqueous polymer emulsions, solvent-based polymers and 100% solids polymers, and may include a plasticizer. *See Merry*, col. 5, line 61 - col. 6, line 9.

However, Merry does not teach or suggest that its organic binders are dispersed in its plasticizers, which, as discussed above, is necessary for a plastisol state. *See generally Merry*. Rather, Merry teaches compositions in which the binders are dispersed water or solvent, which are not plasticizers. Therefore, contrary to the assertion that the Merry compositions are in a plastisol state merely because the Merry compositions may contain plasticizers, the Merry compositions are not in a plastisol state, as required by independent claim 1.

Because Merry does not teach or suggest a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a

plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1, independent claim 1 and its dependent claims 2, 3 and 6 are patentable over Merry. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**IV. Claim Rejections Under 35 U.S.C. §103**

**A. Bridge in view of Hudecek**

The Office Action rejects claims 2-6, 25 and 26 under 35 U.S.C. §103(a) over Great Britain Patent Publication No. 2,079,801 to Bridge as applied to claim 1, in view of U.S. Patent No. 3,971,744 to Hudecek et al. Applicants respectfully traverse this rejection.

Claims 2-6, 25 and 26 depend, directly or indirectly, from independent claim 1 and incorporate all of the limitations thereof.

As discussed above, Bridge does not teach or suggest a composition that is in a plastisol state, and therefore does not teach or suggest a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1. Thus, Bridge alone cannot support a rejection of independent claim 1 or its dependent claims 2-6, 25 and 26. Hudecek does not remedy the shortcomings of Bridge.

Hudecek teaches a method for preparing emulsions, concentrated dispersions and pastes including plasticizers and hydrophilic fillers. *See* Hudecek, Abstract. Hudecek teaches that these preparations are prepared by polymerizing a mixture of monomers in the presence of initiators and in a medium consisting of a plasticizer or a plasticizer mixture. *See* Hudecek, col. 1, lines 50-61. The Hudecek polymerization products are processed into Na, K or NH<sub>4</sub> forms by combination with aqueous salt solutions to form vaselinic emulsions of water and copolymer/plasticizer mixture. *See* Hudecek, col. 2, lines 46-52; col. 3, line 4 - col. 4, line 25. That is, the compositions disclosed by Hudecek are water/(copolymer/plasticizer)

emulsions. In contrast to the Hudecek compositions, the claimed compositions are in a plastisol state, and do not contain significant amounts of water, as can be seen from the examples in the specification. *See* Specification, page 8, line 12 - page 10, line 27.

The compositions produced by the Hudecek method are not plastisols in which an acrylic resin and an intumescent agent are dispersed, as required by claim 1, but instead are vaselinic emulsions of water and copolymer/plasticizer mixture. *See* Hudecek, col. 2, lines 46-52; col. 3, line 4 - col. 4, line 25.

Thus, Hudecek, like Bridge, does not teach or suggest a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1. Thus, Hudecek, alone or in combination with Bridge, cannot support a rejection of independent claim 1 or its dependent claims 2-6, 25 and 26.

For at least these reasons, claims 2-6, 25 and 26 are patentable over Bridge and Hudecek, individually and in combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**B. Merry**

The Office Action rejects claims 5, 25 and 26 under 35 U.S.C. §103(a) over U.S. Patent No. 5,688,039 to Merry. Applicants respectfully traverse this rejection.

Claims 5, 25 and 26 depend from claim 2, which in turn depends from claim 1. Thus, claims 5, 25 and 26 each incorporate all of the limitations of claim 2 and independent claim 1.

As discussed above, Merry does not disclose or suggest: a "halogen-free fire-retarded plastic composition ... wherein: - said composition is in the plastisol state and comprises a plasticizing medium in which the acrylic resin and the intumescent agent are dispersed," as set forth in claim 1. Thus, for at least the same reasons that independent claim 1 and its dependent claim 2 are patentable over Merry, claims 5, 25 and 26 are also patentable over


Merry. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**V. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-31 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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WPB::JSA:JMS/ccs

**Attachments:**

- Attachment A: Dictionary Page 1034 (labeled Annex 11)
- Attachment B: Hawleys' Condensed Chemical Dictionary 889 (13<sup>th</sup> ed. 1997)
- Attachment C: Technical DataSheet Abstracts

Date: December 13, 2005

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## 1034

plas-ti-sol (plas'ti sāl' -sōl') n. [*PLASTIC* + *SOL*] a liquid dispersion

Year	Total (%)	White (%)
1950	10.0	9.0
1960	10.5	9.5
1970	11.0	10.0
1980	11.5	10.5
1990	12.0	11.0
2000	12.5	11.5
2010	13.0	12.0
2020	13.5	12.5
2030	14.0	13.0
2040	15.0	14.0
2050	18.0	16.0

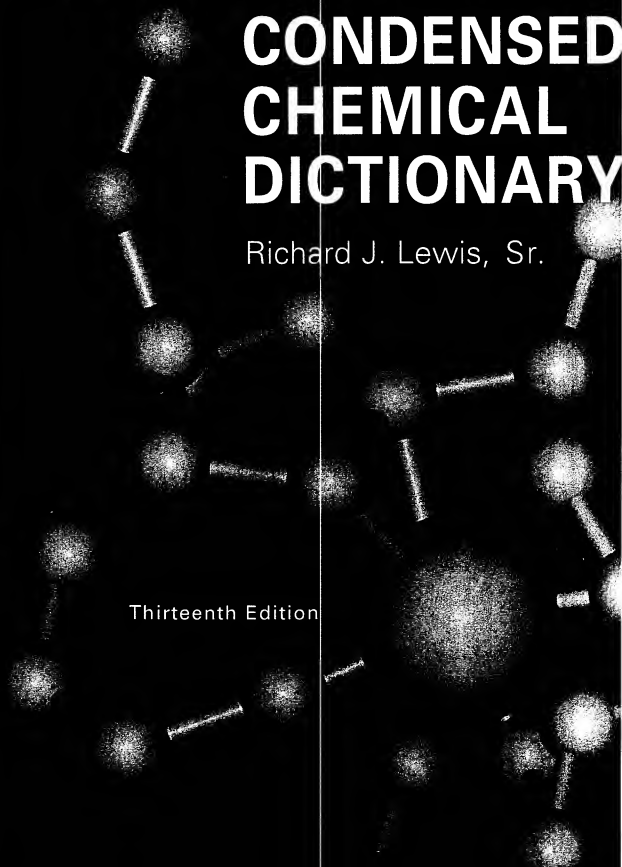
Application No. 09/936,923  
Attachment B

*Hawley's*

# CONDENSED CHEMICAL DICTIONARY

Richard J. Lewis, Sr.

Thirteenth Edition



*Hawley's*  
*Condensed Chemical*  
*Dictionary*

THIRTEENTH EDITION

Revised by  
Richard J. Lewis, Sr.



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CIP

phor was used in the original modification of nitrocellulose to "Celluloid."  
See plastisol; softener.

**plastic pipe.** Tubes, cylinders, conduits, and continuous length piping made (1) from thermoplastic polymers unreinforced (polyethylene, polyvinyl chloride, ABS polymers, polypropylene) or (2) from thermosetting polymers (polyesters, phenolics, epoxies) blended with 60–80% of such reinforcing materials as chopped asbestos or glass fibers to increase strength. The latter type is a reinforced plastic. In general the properties of plastic tubing or pipe are those of the polymers that comprise it. Most have good resistance to chemicals, corrosion, weathering, etc., combined with flexibility, light weight, and high strength. They are combustible but generally slow burning. The reinforced type is widely used as underground conduit for transportation of gases and fluids, including city water services, sewage disposal systems, etc. Its use in buildings is subject to local building codes.

For additional information contact Plastic Pipe Institute, 355 Lexington Ave., New York, NY 10017.

**plastic, reinforced.** See reinforced plastic.

**"Plasticryl" [Abco].** TM for emulsion and solvent-based synthetic acrylate polymers.  
Use: For textile preparation and finishing, in binders, inks, and adhesives.

**"Plat-Iron" [SCM].** TM for high-purity electrolytic iron powder and reduced iron oxide powder, annealed and unannealed.  
Use: Powder enrichment, catalyst, pole pieces, magnets, electronic cores, welding rod coatings, sintered structural parts, and oilless bearings.

**plastisol.** A dispersion of finely divided resin in a plasticizer. A typical composition is 100 parts resin and 50 parts plasticizer, forming a paste that gels when heated to 150°C as a result of solvation of the resin particles by the plasticizer. If a volatile solvent is included, the plastisol is called an organosol. Plastisols are used for molding thermoplastic resins, chiefly polyvinyl chloride.  
See plasticizer.

**"Plast-Manganese" [SCM].** TM for electrolytic manganese powder.  
Use: Welding rod coatings, pyrotechnics, and fuses.

**"Plast-Nickel" [SCM].** TM for nickel powder.  
Use: Welding rod coatings, sintered permanent magnets, filters, and parts.

**"Plast-Silicon" [SCM].** TM for silicon powder.  
Use: Fuses and pyrotechnics.

**plate column.** Distillation column consisting of a number of perforated, equally spaced, horizontal plates on which a layer of liquid is maintained.

**plate efficiency.** (1) The number of theoretical plates that are divided by the number of plates actually used in a tower. (2) Overall plate efficiency refers to the number of equilibrium states necessary for a given separation, divided by the number of actual plates required.

**platelet.** (thrombocyte). A proteinaceous cellular structure occurring in blood in the amount of  $150\text{--}500 \times 10^9$  units/mm<sup>3</sup>. Platelets range from 2 to 4  $\mu\text{m}$  in diameter and contain no nuclei. They are rich in amine compounds, which constrict the blood vessels at the site of an injury, to which the platelets adhere; on dissolution they release thromboplastin, which initiates the coagulation mechanism.  
See blood; fibrinogen; thrombin.

**platen.** A vertically inmovable plate (deck) of a compression molding press.  
See hydraulic press.

**platforming.** The process in which octane ratings of gasoline are raised by dehydrogenating naphthenes to aromatics, cracking high-boiling paraffins, and isomerizing paraffins to form products of greater chain branching. Desulfurization also takes place in this process.

**platinic.** Refers to compounds containing tetravalent platinum.

**platinic ammonium chloride.** See ammonium hexachloroplatinate.

**platinic chloride.** See chloroplatinic acid, platinum chloride.

**platinic oxide.** See platinum dioxide.

**platinic sal ammoniac.** See ammonium hexachloroplatinate.

**platinic sodium chloride.** See sodium chloroplatinate.

**platinic sulfate.** See platinum sulfate.

**platinous ammonium chloride.** See ammonium chloroplatinate.

**platinous chloride.** See platinum dichloride.

**platinous iodide.** See platinum iodide.

**platinum.**  
CAS: 7440-06-4. Pt. Metallic element of atomic number 78, group VII of the periodic table, aw 195.09, valences of 2, 4. There are five stable isotopes.

Technical DataSheet Abstract

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Palatinol® 911

BASF

Additive

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**Tech  
Direct** 

Plasticizer >> Phthalate

Chemical composition: Phthalates of predominantly linear C 9 –C 11 alcohols  
Physical form: Liquid  
CAS Number: 68515-43-5

Product description

Colourless, clear phthalate of predominantly linear C 9 –C 11 alcohols. Used as a plasticizer for automobile interior equipment. Offers low fogging tendency.

Applications : artificial leather (automotive, luggage), truck tarpaulins and tent covers, table cloths, protective clothing, vinyl wall coverings and conveyor belts.

Resin/Binder

• Vinyl

Application/Market

- Architectural / Decorative
- Automotive OEM
- Transportation >> Truck

Typical properties	Value	Unit
Dynamic viscosity @ 20°C	68 - 78	mPa.s
Density @ 20°C	0.96 - 0.964	g/cm3
Color, Pt-Co	< 40	
Refractive index @ 20°C	1.482 - 1.485	
Acid number	< 0.07	mg KOH/g
Ester content	> 99.5	%
Water content	< 0.05	%
Molar mass	450	g/mol

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## Palatinol® AH

BASF

## Additive

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## Plasticizer &gt;&gt; Phthalate

Chemical composition: Dioctyl phthalate  
Physical form: Liquid  
CAS Number: 204-211-0

## Product description

Colourless, clear dioctyl phthalate (DOP). Used as a plasticizer for cellulose coatings, cellulose acetate butyrate and dispersions.

Applications : artificial leather (automotive, luggage), truck tarpaulins and tent covers, table cloths, protective clothing, vinyl wall coverings and conveyor belts.

## Resin/Binder

- Cellulosic Resins

## Application/Market

- Architectural / Decorative
- Automotive OEM
- Transportation >> Truck

Typical properties	Value	Unit
Dynamic viscosity @ 20°C	77 - 82	mPa.s
Density @ 20°C	0.983 - 0.985	g/cm3
Color, Pt-Co	< 25	
Refractive index @ 20°C	1.486 - 1.487	
Acid number	< 0.07	
Ester content	> 99.5	mg KOH/g
Water content	< 0.05	%
Molar mass	390.6	g/mol

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**Vestinol® IB**

Degussa-Oxeno Olefinchemie

**Additive**[Request more product information](#)**Plasticizer >> Phthalate**

Chemical composition: Diisobutyl phthalate  
Physical form: Liquid  
CAS Number: 84-69-5

**Product description**

Di-iso-butyl-phthalate. Used as a plasticizer for the flexibilization of printing inks. Applicable for gelling at low temperature. Possesses a high volatility. Can be used in admixture with longer chain esters.

**Application/Market**

• INKS

**Coatings/Inks System**

• Inks

Typical properties	Value	Unit
Color, APHA, Hazen	< 25	mg P/l
Dynamic viscosity @ 20°C	40 - 44	mPas
Density @ 20°C	1.038 - 1.04	g/ml
Refractive index @20°C	1.489 - 1.49	
Acid number	< 0.04	mg KOH/g
Molar mass	278.4	
Hydroxyl number	0.1	mg KOH/g
Flash point	170	°C

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## Technical DataSheet Abstract

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### Kronitex® KP-140

Great Lakes

#### Additive

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**Tech  
Direct** >

Flame retardant / Fire retardant >> Phosphorus based  
Plasticizer >> Phosphate

Chemical composition: Trialkyl phosphate  
Physical form: Liquid

#### Product description

Readily biodegradable, low viscosity, trialkyl phosphate. Used as a plasticizer, a system diluent and a flame retardant in water-based inks, paints and wall coatings in a variety of resin systems. Eliminates high and low spots. Enhances gloss. Reduces viscosity. Provides very low temperature flexibility to plastics and acrylonitrile rubbers.

#### Application/Market

- INKS
- Architectural / Decorative

#### Coatings/Inks System

- Inks >> Water-based
- Coatings >> Waterborne

Typical properties	Value	Unit
Color, APHA	< 75	
Specific gravity @ 20°C	1.016 - 1.023	
Moisture	< 0.2	%wt
Total acid number	< 0.5	mg KOH/g
Boiling range @ 4 mmHg	215 - 228	°C
Freezing point	< -70	°C
Flash point, closed cup	224	°C
Viscosity @ 20°C	12.2	cp

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**ADD APT® PolySurf HPH**

ADD APT

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Photoinitiator

Plasticizer &gt;&gt; Phosphate

Chemical composition:

Mixture of acrylated mono-and di-phosphate ester

Physical form:

Liquid

**Product description**

Mixture of methacrylated mono-and di-phosphate ester. Used as a solvent free UV-curable additive for paints, lacquers and printing inks. Can be used as a polymerisable hydrophilic non-ionic surfactant and a co-polymerisable plasticizer for polyacrylates, polyesters and PVC. Offers easy handling and very good levelling/wetting properties. Improves adhesion to metal surfaces in UV-curable systems, wetting of substrates like wood and metal and storage and mechanical stability. Reduces grit building and foam formation. Gives no migration of non-ionic surfactant, improved wet-scrub resistance, improved adhesion to metal, high yellowing resistance even after enamel application, flame retardant properties and some degree of crosslinking without gel formation.

Use level: 0.5-2.5 %wt based on monomers.

**Resin/Binder**

- Acrylic/Acrylate Resins
- Polyester
- Vinyl

**Coatings/Inks System**

- Coatings >> UV / Radiation Curing

Typical properties	Value	Unit
Viscosity @ 25°C	700 - 1400	cSt
Color, Gardner	< 4	
pH	3 - 4.5	
Phosphorous content	8.5	%
Active content	> 99.5	%

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**Santicizer® 261**

Ferro

**Additive**[Request more product information](#)**Tech  
Direct****Plasticizer >> Phthalate**

Chemical composition: Alkyl benzyl phthalate  
Physical form: Liquid  
CAS Number: 68515-40-2

**Product description**

Fast fusing phthalate plasticizer. Used in acrylic coatings. Possesses very good resistance to extraction, low initial viscosity, good shelf life and flow properties. Provides very good durability, anti-fogging properties, good adhesion to metal undercoats, improved weatherability and good solvent-craze resistance. Offers gloss, good flow characteristics and flexibility without brittleness for a long, handsome coating life.

**Resin/Binder**

• Acrylic/Acrylate Resins

**Coatings/Inks System**

• Coatings

Typical properties	Value	Unit
Specific gravity @ 20°C	1.073	
Refractive index @20°C	1.5275	
Acidity	< 0.25	meq KOH/ 100 g
Molecular weight	368.5	
Color, APHA	< 75	
Flash point, COC	229	°C
Surface tension @25°C	0.0337	Nm

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## Santicizer® 278

Ferro

### Additive

Request more product information 

### Plasticizer >> Phthalate

Chemical composition: Texanol benzyl phthalate  
Physical form: Liquid  
CAS Number: 16883-83-3

### Product description

Monomeric phthalic ester plasticizer. Used in acrylic coatings and acrylic powder coatings. Possesses very low volatility, fast fusion characteristics, very low efficiency and outstanding stain resistance. Provides very good resistance to water spotting, great toughness and very good adhesion. Improves flow-out characteristics.

### Resin/Binder

- Acrylic/Acrylate Resins

### Application/Market

- Powder coating

### Coatings/Inks System

- Coatings >> Powder Coatings

Typical properties	Value	Unit
Specific gravity @ 20°C	1.0995	
Refractive Index @20°C	1.52	
Acidity	< 0.37	meq KOH/ 100 g
Molecular weight	455	
Color, APHA	< 175	
Flash point, COC	227	°C
Boiling point, 133 Pa	243	°C
Surface tension @25°C	0.0348	N.m

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## Disflamoli® DPK

Bayer

## Additive

Request more product information



## Plasticizer &gt;&gt; Phosphate

Chemical composition: Diphenyl cresyl phosphate  
 Physical form: Liquid  
 CAS Number: 26444-49-5

## Product description

Diphenyl cresyl phosphate (DPCF). Used as a plasticiser in protective occupational coatings and coatings industry. Gives very good flame retardance, good hydrolysis resistance, great elasticity, improved punching quality, thermal stability, good compatibility with most monomeric and polymeric plasticisers and good compatibility with a large number of polymers.

## Resin/Binder

- Acrylic/Acrylate Resins
- Cellulosic Resins
- Phenolic Resins
- Polyurethane
- Vinyl

## Application/Market

- Marine /Anti-Corrosive / Protective >> Heavy duty (anti-corrosive)

Typical properties	Value	Unit
Refractive index @ 20°C	1.562 - 1.564	
Acid value	< 0.05	mg KOH/g
Color, Hazen	< 70	
Water content	< 0.1	%
Density @ 20°C	1.205 - 1.215	g/cm <sup>3</sup>
Viscosity @ 20°C	44 - 49	mPa.s
Free phenol content	< 0.01	%
Boiling point @ 5 hPa	230	°C

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**Disflamoll® TOF**

Bayer

**Additive**

Request more product information

**Tech  
Direct**

Plasticizer &gt;&gt; Phthalate

Chemical composition: Tris-(2-ethylhexyl)-phosphate  
Physical form: Liquid  
CAS Number: 78-42-2

**Product description**

Tris-(2-ethylhexyl)-phosphate (TOF). Used as a plasticiser in coatings industry. Gives very good resistance to low temperatures and weathering, good flexibility and rebound resilience at low temperatures, good light stability, good saponification and chemical resistance and low surface tension.

**Resin/Binder**

- Acrylic/Acrylate Resins
- Cellulosic Resins
- Polyurethane
- Vinyl

Typical properties	Value	Unit
Refractive index @ 20°C	1.443 - 1.445	
Acid value	< 0.05	mg KOH/g
Color, Hazen	< 40	
Water content	< 0.2	%
Density @ 20°C	0.92 - 0.926	g/cm3
Viscosity @ 20°C	13 - 15	mPa.s
Content of tris-(2-ethylhexyl)-phosphonate	> 98.5	%
Boiling point @ 5 hPa	210	°C

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## Disflamoll® DPO

Bayer

## Additive

Request more product information

Tech  
Direct

## Plasticizer &gt;&gt; Phosphate

Chemical composition: Diphenyl octyl phosphate  
Physical form: Liquid  
CAS Number: 1241-94-7

## Product description

Diphenyl octyl phosphate (DPOF). Used as a plasticiser in coatings industry such as PVC floor and wall coverings. Gives good flame retardance, good light and weathering resistance, good saponification resistance, very good low temperature stability, good gelling behaviour, low inherent viscosity, good plasticising effect and good compatibility with most monomer and polymer plasticisers and with a large number of polymers.

## Resin/Binder

- Acrylic/Acrylate Resins
- Cellulosic Resins
- Polyurethane
- Vinyl

## Application/Market

- Architectural / Decorative

Typical properties	Value	Unit
Refractive index @ 20°C	1.507 - 1.51	
Acid value	< 0.05	mg KOH/g
Color, Hazen	< 60	
Water content	< 0.2	%
Density @ 20°C	1.06 - 1.09	g/cm <sup>3</sup>
Viscosity @ 20°C	21 - 23	mPa.s
Free phenol content	< 0.05	%
Boiling point @ 5 hPa	225	°C

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